

Application No.: 10/688,690  
Amendment dated: November 14, 2005  
Reply to Office Action of October 12, 2005  
Attorney Docket No.: 1118.us

This listing of claims will replace all prior versions and listings of claims in this application:

b.) Listing of Claims

1. (original) A spectroscopy system, comprising:  
a source system for generating light to illuminate a sample;  
a tunable Fabry-Perot filter system for filtering the light generated by the source; and  
a detector system for detecting the light filtered by the tunable Fabry-Perot filter from the sample,  
wherein at least two of the source system, tunable Fabry-Perot filter system, and the detector system are integrated together.
2. (original) A spectroscopy system as claimed in claim 1, wherein the source system comprises a broadband source.
3. (original) A spectroscopy system as claimed in claim 1, wherein the source system comprises multiple, multiplexed diode chips, operating at different wavelength ranges.
4. (original) A spectroscopy system as claimed in claim 1, wherein the source system comprises at least one superluminescent light emitting diode (SLED) source.
5. (original) A spectroscopy system as claimed in claim 1, wherein the tunable Fabry-Perot filter system comprises multiple, parallel filters.
6. (original) A spectroscopy system as claimed in claim 1, wherein the tunable Fabry-Perot filter system comprises multiple filters for filtering different wavelength ranges.
7. (original) A spectroscopy system as claimed in claim 1, wherein the tunable Fabry-Perot filter system comprises multiple, serial filters.

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8. (original) A spectroscopy system as claimed in claim 1, wherein the tunable Fabry-Perot filter system comprises multiple, serial filters with different free spectral ranges.
9. (original) A spectroscopy system as claimed in claim 1, wherein the detector system comprises multiple detectors responsive to different wavelength ranges.
10. (original) A spectroscopy system as claimed in claim 1, wherein the source system and the Fabry-Perot filter system are integrated on a common bench, in a common package.
11. (original) A spectroscopy system as claimed in claim 1, wherein the Fabry-Perot filter system and the detector system are integrated on a common bench, in a common package.
12. (original) A spectroscopy system as claimed in claim 1, wherein the source system, Fabry-Perot filter system, and the detector system are integrated on a common bench, in a common package.
13. (original) A spectroscopy system as claimed in claim 1, wherein the Fabry-Perot filter system comprises at least one MEMS tunable filter.
14. (original) A spectroscopy system as claimed in claim 1, further comprising an isolation system between the source system and the tunable Fabry-Perot system for preventing backreflections in to the source system.
15. (currently amended) A spectroscopy system as claimed in claim 1, wherein:  
~~A tunable light source, comprising:~~  
the source system comprises a broadband source for generating broadband  
light; and  
a the tunable Fabry Perot filter for spectrally filtering filters the broadband  
light from the broadband source to generate a tunable signal to irradiate a  
the sample.

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16. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 15, wherein the broadband source comprises a light emitting diode.
17. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 15, wherein the broadband source comprises a superluminescent light emitting diode.
18. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 15, wherein the broadband source comprises an array of diodes.
19. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 15, wherein the broadband source and the Fabry Perot filter are installed in common on an optical bench.
20. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 15, comprising a tap for diverting a portion of the signal from the Fabry Perot tunable filter to a detector.
21. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 20, further comprising a stable spectral reference interposed between the detector and the tap.
22. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 21, wherein the reference is a gas cell.
23. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 21, wherein the reference is an etalon.
24. (currently amended) A spectroscopy system as claimed in claim A-tunable light source as claimed in claim 15, further comprising:  
a controller for modulating the broadband source; and  
a detector for detecting the tunable signal from the Fabry Perot filter; and

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a lock-in amplifier responsive to the controller for locking onto a modulation of the tunable signal.

25. (withdrawn) A tunable source, comprising:  
a broadband source for generating a broadband signal; and  
a tunable filter for generating a tunable narrow band signal from the broadband signal; and  
an isolator interposed between the broadband source and the tunable filter for preventing back reflections from the tunable filter into the broadband source.
26. (withdrawn) A tunable source as claimed in claim 25, wherein a broadband source, isolator, and tunable filter are integrated on a common optical bench.
27. (cancelled)
28. (withdrawn) A tunable source, comprising:  
a broadband source for generating a broadband signal;  
a tunable filter for spectrally filtering the broadband signal in order to generate a narrowband tunable signal; and  
an amplifier for amplifying the narrowband tunable signal.
29. (withdrawn) A tunable source as claimed in claim 28, wherein the amplifier is a semiconductor optical amplifier.
30. (withdrawn) A tunable signal as claimed in claim 28, wherein the amplifier is a fiber amplifier.
31. (withdrawn) A tunable signal as claimed in claim 28, wherein the fiber amplifier is one of an erbium, ytterbium, thulium or Raman fiber amplifier.
32. (currently amended) A spectroscopy system as claimed in claim 1, wherein the tunable Fabry-Perot filter system comprises A MEMS Fabry Perot filter comprising a MEMS tunable movable mirror die and a fixed mirror substrate,

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which is bonded to the MEMS mirror die, wherein the filter is edge bonded onto an optical bench.

33. (currently amended) A spectroscopy system as claimed in claim A-MEMS tunable filter as claimed in claim 32, wherein the fixed mirror substrate extends below a bottom of the MEMS mirror die for attachment to the optical bench

34. (currently amended) A spectroscopy system as claimed in claim A-MEMS tunable filter as claimed in claim 32, wherein the MEMS mirror die is separated from the optical bench and supported by the fixed mirror substrate.

35. (new) A spectroscopy system as claimed in claim 1, wherein the source system is a semiconductor source system, the spectroscopy system further comprises:

- an optical bench (B) to which the semiconductor source system and the tunable Fabry-Perot filter system are attached;
- a hermetic package (132) containing the optical bench;
- a temperature controller (134) for stabilizing a temperature of the semiconductor source system and the tunable Fabry-Perot filter system in the hermetic package.